

(12) **United States Patent**  
**Haramain**

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(54) **DEVICE AND METHOD FOR SIMULATION OF MAGNETOHYDRODYNAMICS**

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(57) **ABSTRACT**

A magnetohydrodynamic simulator that includes a plasma container. The magnetohydrodynamic simulator also includes an first ionizable gas substantially contained within the plasma container. In addition, the magnetohydrodynamic simulator also includes a first loop positioned adjacent to the plasma container, wherein the first loop includes a gap, a first electrical connection on a first side of the gap, a second electrical connection of a second side of the gap, and a first material having at least one of low magnetic susceptibility and high conductivity. The first loop can be made up from an assembly of one or a plethora of wire loop coils. In such cases, electrical connection is made through the ends of the coil wires. The magnetohydrodynamic simulator further includes an electrically conductive first coil wound about the plasma container and through the first loop.

**21 Claims, 4 Drawing Sheets**

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**H05H 1/12** (2006.01)

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(58) **Field of Classification Search** ..... 315/111.21, 315/111.41, 111.51, 111.61, 111.71, 111.91; 376/103–107, 127–130, 133–136; *H05H 1/22*, *H05H 1/02*, *1/12*  
See application file for complete search history.

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